OCEAN MATRIX®

Instruction Manual

Thank you for purchasing an Ocean Matrix component. This unit is designed to give you years of trouble free professional operation for your most demanding applications. It is our goal to develop long term partnerships with our customers through our commitment to exceed their expectations.

OMX-7280

For Repair Information and to view the entire Ocean Matrix product line, please visit our web site.

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1 Introduction

Congratulations on purchasing your **OMX-7280** *Presentation Switcher / Scaler*. This product is ideal for the following typical applications:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Production studios, rental and staging
- Any application where high quality conversion and switching of multiple and different video signals to graphical data signals is required for projection purposes

The package includes the following items:

- **OMX-7280** *Presentation Switcher / Scaler*
- Infrared remote control transmitter, power cord,[1] null-modem adapter and this user manual

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

3 Overview

The **OMX-7280** is a 9-input Proscale™ *Presentation Switcher / Scaler* with unbalanced stereo and digital S/PDIF audio. The **OMX-7280** scales any composite, s-Video (Y/C), component video (YUV), HDMI or computer graphics video signal, as well as jpeg files (via USB) up or down to a selectable graphics or HDTV output resolution and provides glitch-free switching between sources through FTB™ (fade-thru-black) switching technology. The output signal is available simultaneously on a 15-pin HD computer graphics video (UXGA) connector and on an HDMI connector. The **OMX-7280** features include:

- Extremely high performance scaling technology. High quality 3:2 and 2:2 pull down[2] de-interlacing and full up and down scaling of computer graphics video input signals
- Fade-Thru-Black Switching - the video fades to black and then the new input fades from black for glitch-free and smooth switching. The output signal provides constant sync so the display never glitches

1 We recommend that you use only the power cord that is supplied with this machine

2 Accommodates the frame-rate of a converted movie (24 frames per second) to video frequencies (25 frames per second (PAL); 30 frames per second (NTSC)

- Picture-in-Picture Image Insertion Technology - ultra stable picture-in-picture, picture-and-picture, and split screen capability. Any video source can be inserted into or positioned next to a computer graphics video source or vice versa with window positioning and sizing controls
- Four user definable (universal) video inputs (each can be set as composite video, s-Video (Y/C) or component video), two computer graphics video inputs, two HDMI inputs and 1 USB input (for reading JPEG picture files[1])
- HDTV compatible component input
- HDTV output resolutions - 480p, 576p, 720p 1080i, and 1080p
- Scaled video outputs - HDMI and computer graphics video
- HDMI supports up to 2.25Gbps bandwidth per graphic channel[2]
- Multiple computer graphics output resolutions - including a user-defined output resolution with selectable refresh rates
- Multiple aspect ratio selections
- Companion AFV (audio-follow-video) for every analog video input - supports embedded audio on the two HDMI inputs and output
- Built-in noise reduction and picture enhancement features
- Audio inputs - four (stereo audio or S/PDIF on 2 RCA connectors) for each of the four universal video inputs; two stereo audio (on 3.5mm connectors) for the two computer graphics video inputs; and embedded audio on the HDMI inputs
- Audio outputs - S/PDIF and stereo audio (RCA connectors). Transcodes stereo or S/PDIF audio to both stereo and S/PDIF audio and embeds audio onto the HDMI output
- Built-in Time Base Corrector - stabilizes video sources with unstable sync
- Built-in video Proc-Amp - color, hue, sharpness, contrast, and brightness are set individually for each input
- A BLANK button, a FREEZE button, a RESET TO XGA/720P button (to hardware-reset the output resolution); and a PANEL LOCK button[3]
- Built-in audio Proc-Amp - with bass, treble, balance and loudness control, as well as audio delay
- Supports firmware upgrade via the USB port
- An OSD (On-Screen Display) for making adjustments, that can be located anywhere on the screen

1 JPEG files in EXIF format are recognized, up to 1920x1200

2 Suitable for resolutions up to UXGA at 60Hz, and for all HD resolutions

3 The front panel blank, freeze and lock buttons can be programmed via the OSD menu (see Table 15)

In addition, the **OMX-7280**:

- Includes non-volatile memory that retains the last settings, after switching the power off and then on again
- Digitally reprocesses the signal to correct mastering errors, and regenerates the video at a higher line and pixel rate format, providing native-resolution video for LCD, DLP and plasma displays
- Is specifically designed to improve video quality by reducing chroma noise
- Scales and zooms (to up to 400% of the original size)
- Can provide non-linear scaling for 4:3, 16:9 transformation

Control your **OMX-7280** directly via the front panel push buttons, or:

- By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- Remotely, from the infrared remote control transmitter (with on-screen menus)

The **OMX-7280** is housed in a 19" 1U rack mountable enclosure, with rack "ears" included, and is fed from a 100-240 VAC universal switching power supply.

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[1] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the maximum high-definition image and sound quality in use today. In particular, HDMI[2]:

- Provides a simple[3] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy[4] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[5] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements

1 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

2 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

3 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

4 HDMI technology has been designed to use standard copper cable construction at up to 15m

5 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

- Benefits consumers by providing superior, uncompressed digital video quality via a single cable[1], and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play
- Has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p/60), standard definition formats such as NTSC or PAL, as well as 480p and 576p

3.2 Recommendations for Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **OMX-7280** away from moisture, excessive sunlight and dust

4 Your Presentation Switcher / Scaler

Figure 1, and Table 1 define the front panel of the **OMX-7280**; Figure 2 and Table 2 define the rear panel.

1 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

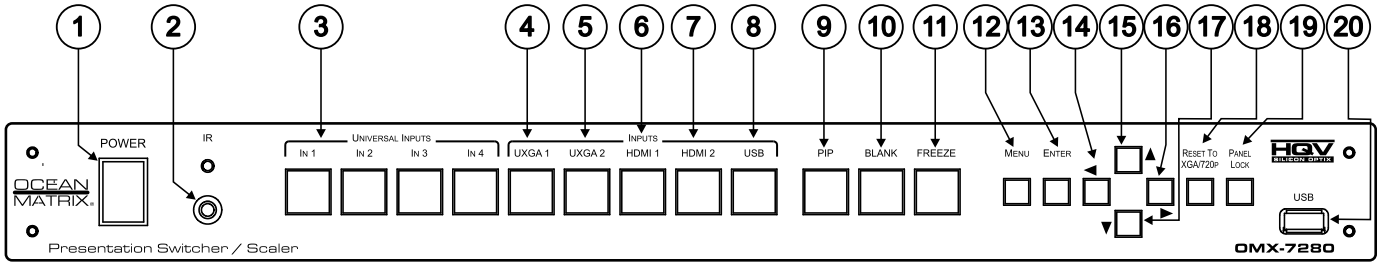


Figure 1: OMX-7280 Presentation Switcher / Scaler Front Panel

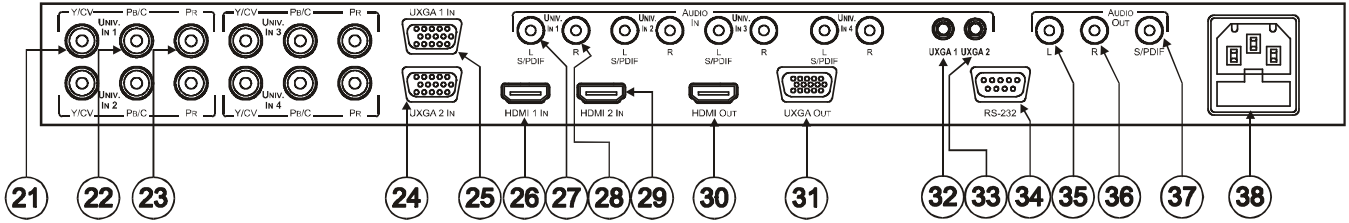


Figure 2: OMX-7280 Presentation Switcher / Scaler Rear Panel

Table 1: Front Panel Presentation Switcher / Scaler Features

#	Feature		Function
1	*POWER* Switch		Illuminated switch for turning the machine ON or OFF
2	*IR* Receiver / LED		Red when the unit accepts IR remote commands
3	*UNIVERSAL INPUT* Selector Buttons		Press to select the composite video / s-Video / component video source[1] (from 1 to 4)
4	*INPUT* Selector Buttons[2]	*UXGA 1*	Press to select the UXGA[1] source 1
5		*UXGA 2*	Press to select the UXGA[1] source 2
6		*HDMI 1*	Press to select the HDMI source 1
7		*HDMI 2*	Press to select the HDMI source 2
8		*USB*	Press to select the USB[3] source
9	*PIP* Button		Toggles the picture-in-picture function (see section 7.2)
10	*BLANK* Button		Press to toggle between a blank screen (blue or black screen)[4] and the display
11	*FREEZE* Button		Press to freeze/unfreeze the output video image[4]
12	*MENU* Button		Displays the OSD menu screen (toggle)
13	*ENTER* Button		Moves to the next level in the OSD screen, or accepts a new parameter
14	◄ Button		Decreases the range by one step in the OSD screen or moves to the previous level in the OSD screen
15	▲ Button		Moves up one step (in the same level) in the OSD screen
16	► Button		Increases the range by one step in the OSD screen
17	▼ Button		Moves down one step (in the same level) in the OSD screen
18	*RESET TO XGA/720p* Button		Press and hold for a few seconds to reset to the default output resolution (*XGA/720p* @60Hz)[5]
19	*PANEL LOCK* Button		Press to lock/unlock the front panel to prevent unintentional operation
20	*USB* Connector		Connect to a USB drive to read JPEG files[6]

1 And the appropriate audio source

2 When selected, button illuminates. See section 7.1 for details of how to program the INPUT SELECTOR buttons

3 JPEG files in EXIF format on a USB memory stick

4 Can be programmed to mute the audio signal at the same time (see Table 15)

5 Press and hold for about 2 seconds to reset to XGA; or press and hold for about 5 seconds to reset to 720p

6 Files must be in EXIF format

Table 2: Rear Panel Presentation Switcher / Scaler Features

#	Feature		Function
21	*UNIV. IN* RCA Connectors (from 1 to 4)	*Y/CV*	Connect to the video acceptor which can be either composite video (*Y/CV*), s-Video (*Y/CV, PB/C*) or component video (*Y/CV, PB/C, PR*)
22		*PB/C*	
23		*PR*	
24	*UXGA 2 IN* HD15 Connector		Connects to the UXGA (analog interface) graphics source 2
25	*UXGA 1 IN* HD15 Connector		Connects to the UXGA (analog interface) graphics source 1
26	*HDMI 1 IN* Connector		Connect to the HDMI 1 source
27	*AUDIO IN UNIV. IN* RCA Connectors (from 1 to 4)	*L, S/PDIF*	Connect to the left unbalanced stereo analog audio source; Alternatively, connect to a digital audio source
28		*R*	Connect to the right unbalanced stereo analog audio source
29	*HDMI 2 IN* Connector		Connect to the HDMI 2 source
30	*HDMI OUT* Connector		Connect to the HDMI acceptor
31	*UXGA OUT* HD15 Connector		Connects to the video acceptor that displays the scaled output In the default HDTV mode, the signal goes out via 3 PINS: PIN 1 is P_r, PIN 2 is Y, PIN 3 P_b
32	*AUDIO IN* 3.5 Mini Jack	UXGA 1	Connects to the unbalanced stereo analog audio source 1
33		*UXGA 2*	Connects to the unbalanced stereo analog audio source 2
34	*RS-232* 9-pin D-sub Connector		Connects to PC or Serial Controller
35	*AUDIO OUT* RCA Connectors	*L*	Connect to the left unbalanced stereo analog audio acceptor
36		*R*	Connect to the right unbalanced stereo analog audio acceptor
37		*S/PDIF*	Connect to a digital audio acceptor
38	Power Connector with *Fuse*		AC connector enabling power supply to the unit

5 Installing in a Rack

This section describes what to do before installing in a rack and how to rack mount.

Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5º to +45º C (41º to 113º F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20º to +70º C (-4º to 158º F)
Storage humidity range	5 to 95% RHL, non-condensing

CAUTION!!

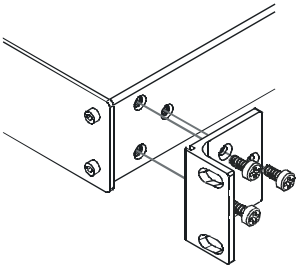
When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note that:

- **In some models, the front panel may feature built-in rack ears**
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power

6 Connecting your Presentation Switcher / Scaler

To connect[1] the **OMX-7280** as illustrated in the example in Figure 3, do the following[2]:

1. Connect the following video sources[3]:
   - A component video[4] source (for example, a DVD player) to the UNIV. IN 1 RCA connectors, Y/CV, P_B/C and P_R
   - An s-Video source (for example, a DVD player) to the UNIV. IN 4 RCA connectors, Y/CV and P_B/C
   - A computer graphics source to the UXGA 1 IN 15-pin HD computer graphics video connector
   - An HDMI source (for example, a DVD player) to the HDMI 1 IN connector
   - A graphics data source (for example, JPEG files from a PC or a USB flash drive) to the USB connector on the front panel of the machine (not illustrated in Figure 3)
2. Connect the unbalanced stereo or digital audio sources[5] (not illustrated in Figure 3):
   - The audio of the component video source 1 to the AUDIO UNIV IN 1 S/PDIF RCA connector
   - The audio of the s-Video source 4 to the AUDIO UNIV IN 4 L and R RCA connector
   - The audio of computer graphics source to the AUDIO UXGA 1 3.5mm mini jack
3. Connect the video outputs:
   - The HDMI OUT connector to an HDMI acceptor (for example, a plasma display)
   - The UXGA OUT 15-pin HD computer graphics video connector[6] to a video acceptor (for example, an analog display)
4. Connect the AUDIO OUT L and R unbalanced stereo audio output and/or the S/PDIF digital audio output to audio acceptors, for example, speakers (not illustrated in Figure 3).

1 Although this example shows only several inputs that are connected, you can connect all the inputs simultaneously

2 Switch OFF the power on each device before connecting it to your OMX-7280. After connecting your OMX-7280, switch on its power and then switch on the power on each device

3 You do not have to connect all the inputs

4 Sometimes called YUV, or Y, B-Y, R-Y, or Y, Pb, Pr

5 As required. Not all devices need to be connected

6 In the HDTV mode, the signal goes out via three PINS: PIN 1 is Red or Pr, PIN 2 is Green or Y, PIN 3 is Blue or Pb

5. Connect the power cord[1] (the power connector is not illustrated in Figure 3).
6. If required, connect A PC via RS-232, see section 6.1

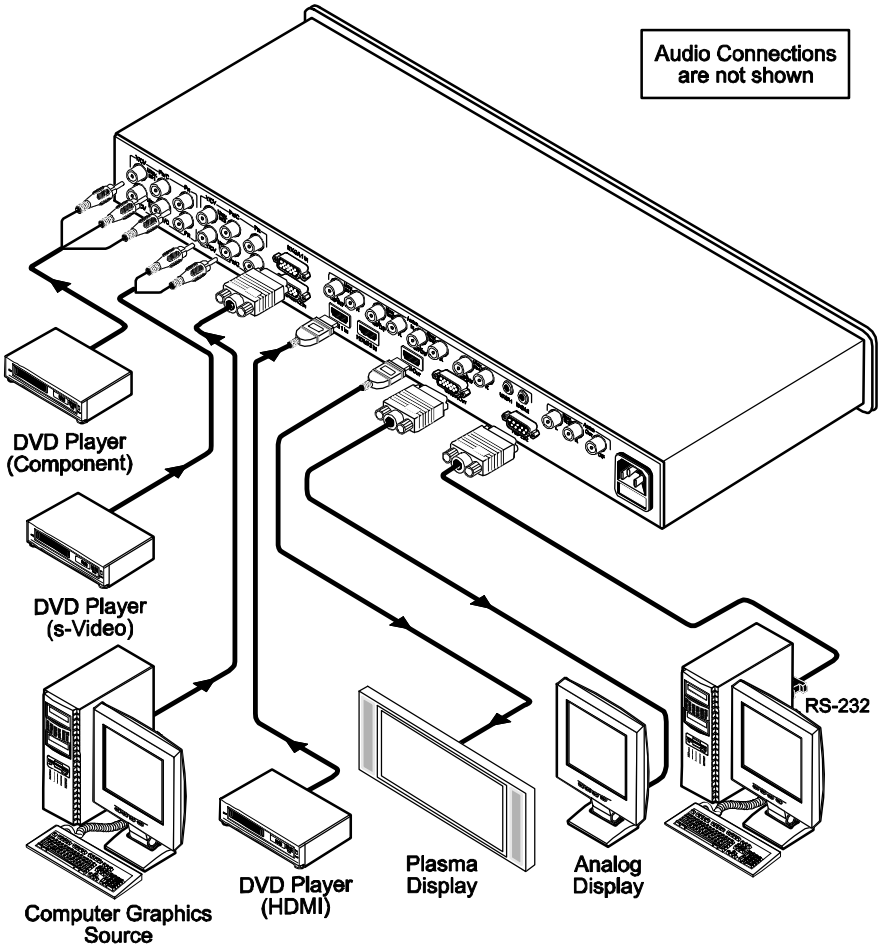


Figure 3: Connecting the OMX-7280 Rear Panel

1 We recommend that you use only the power cord that is supplied with this machine

6.1 Connecting a PC

You can connect a PC (or other controller) to the **OMX-7280** via the RS-232 port for remote control, and for upgrading the firmware.

To connect a PC to a **OMX-7280** unit, using the Null-modem adapter provided with the machine (recommended):

- Connect the RS-232 9-pin D-sub rear panel port on the **OMX-7280** unit to the Null-modem adapter and connect the Null-modem adapter with a 9-wire flat cable to the RS-232 9-pin D-sub port on your PC

To connect a PC to a **OMX-7280** unit, without using a Null-modem adapter:

- Connect the RS-232 9-pin D-sub port on your PC to the RS-232 9-pin D-sub rear panel port on the **OMX-7280** unit, forming a cross-connection[1], as Figure 4 illustrates

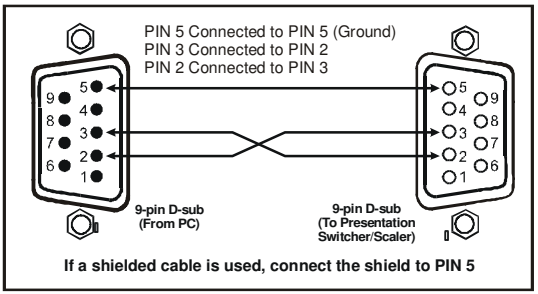

PIN 5 Connected to PIN 5 (Ground)
PIN 3 Connected to PIN 2
PIN 2 Connected to PIN 3
9-pin D-sub
(From PC)
9-pin D-sub
(To Presentation
Switcher/Scaler)
If a shielded cable is used, connect the shield to PIN 5

Figure 4: Connecting the PC

1 Also known as a Null-modem connection

7 Presentation Switcher / Scaler Buttons

The **OMX-7280** includes the following front panel buttons:

- Nine INPUT selector buttons, see section 7.1
- A PIP button, see section 7.2
- BLANK and FREEZE buttons
- Six OSD buttons
- A RESET TO XGA/720p button
- A PANEL LOCK button, see section 7.3

7.1 Switching an Input

Each INPUT SELECTOR button can be used to select the source.

You can switch seamlessly[1] between each input that is connected to a source, by pressing the appropriate INPUT SELECTOR button.

7.2 The PIP Button Feature

The Picture-in-Picture inserter (PIP) uses image insertion technology to present video and graphic sources simultaneously[2]. You can display:

- An inserted video source[3] PIP over a graphic source[4] display
- An inserted graphic source[4] PIP over a video source[3] display

Three types of PIP insertions are available:

- Picture-in-Picture – the PIP image appears over the background image
- Picture + Picture – both the video source and the graphic source are placed side by side and have the same height (the PIP image is stretched lengthwise)
- Split – both the video source and the graphic source are placed side by side (the PIP image appears smaller than the defined size and the source size is reduced)

1 FTB™ switching for glitchless transitions between inputs

2 Since the HDMI signal is HDCP protected, an HDMI signal cannot appear on a display that is not HDCP compliant

3 That is, composite video, s-Video or component video

4 That is, HDMI, USB or VGA

7.2.1 Activating the PIP Feature

You can activate the PIP by:

- Pressing the PIP button
- Pressing the PIP key on the infrared remote control transmitter (see section 7.4, Figure 7)
- Switching on the PIP functionality via the OSD Menu (see Figure 12 and Table 8)

7.2.2 Selecting the PIP Source

To use the PIP feature, set the PIP source via the OSD menu (see Figure 12 and Table 8) by using the OSD front-panel buttons or the remote-transmitter keys.

To set the PIP source via the OSD menu, do the following:

1. Press the MENU button to enter the OSD menu.
2. Press the ► button to move to the PIP icon.
3. Scroll down to select Source and press ENTER.
4. Use the ▲ or ▼ buttons to select the PIP Source from the drop-down list box, and press ENTER (see Table 3).
5. To exit the OSD menu, press the MENU button.

Figure 5: PIP Source Over Background

7.2.3 Quick Selection of the PIP Source

For quick selection of the PIP source, press and hold the PIP front panel button while pressing the input button of the required PIP source. For example, to select UXGA 2 as the graphic PIP source over a video background, press the PIP front panel button while pressing the UXGA 2 front panel button.

When attempting to select a PIP source of the same category as the background source (for example, video on video, which is not compliant to Table 3), a message is prompted: “unavailable operation”

To replace a PIP in the same category (for example, changing the PIP source from UXGA 1 to HDMI 2), press the required PIP Source on the remote control transmitter and the PIP display will change accordingly.

You can swap the PIP source category with the main source category via the:

- Remote control keys, by selecting a new main source and then a new PIP source
- OSD menu, by selecting a new Input source through the Input menu and a new PIP source through the PIP menu

When selecting one PIP source, the Presentation Switcher / Scaler automatically recognizes and displays the selected graphic PIP source on all the video displays[1] and the selected video source on all the graphic[1] displays, compliant to Table 3.

Table 3: PIP Source Appearance Availability

The selected PIP source:	Composite video or s-Video	UXGA, HDMI, component video or USB
Appears on:	UXGA, HDMI, component video or USB	Composite video or s-Video
Does not appear on:	Composite video or s-Video	UXGA, HDMI, component video or USB

7.2.4 Toggling between the PIP and the Screen Source (Swap)

To toggle back and forth between the PIP source and the main display, as Figure 6 illustrates, press the Swap key on the infrared remote control transmitter (see Figure 7).

Figure 6: OSD SWAP Status

1 Even if the input signal is not connected. In this case the PIP appears over a blank screen

7.3 Locking and Unlocking the Front Panel

To prevent changing the settings accidentally or tampering with the unit via the front panel buttons, lock your **OMX-7280**. Unlocking releases the protection mechanism. When the front panel is locked, control is still available via RS-232 port.

To lock the **OMX-7280**:

- Press the PANEL LOCK button on the front panel.
  The front panel is locked and the PANEL LOCK button is illuminated. Pressing a button will have no effect

To unlock the **OMX-7280**:

- Press the illuminated PANEL LOCK button on the front panel
  The front panel unlocks and the PANEL LOCK button is no longer illuminated

For a description of the Save Lock and Input Lock OSD functions, see Table 15.

7.4 The Infrared Remote Control Transmitter

You can control the **OMX-7280** remotely, from the infrared remote control transmitter, which:

- Is a hand held instrument with a convenient keypad that receives its power from 2 AAA size 1.5V DC batteries
- Has a range of up to 15 meters
- Delivers instantaneous results

Figure 7 and Table 4 define the infrared Remote Control Transmitter:

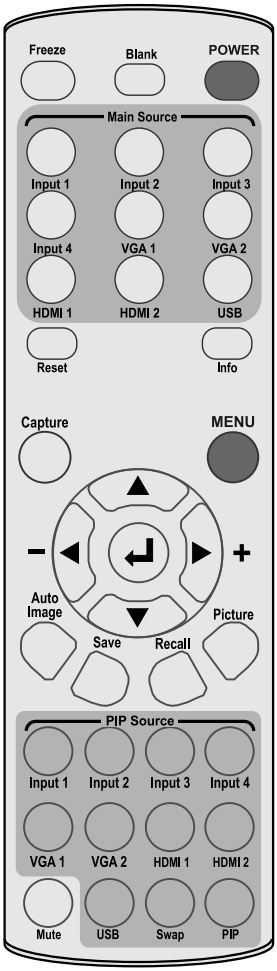


Figure 7: Infrared Remote Control Transmitter

Table 4: Infrared Remote Control Transmitter Functions

key	Function
Freeze	Pauses the output video[1]
Blank	Toggles between a blank screen (blue or black screen) and the display
POWER	Cycles power
Main Source	9 separate keys for selecting each of the following sources: Input 1, Input 2, Input 3, Input 4, VGA 1, VGA2, HDMI 1, HDMI 2 and USB
Reset	Press and hold to reset to the default resolution[2]
Info	Shows the Info OSD menu
Capture	Capture an image to place as a logo or background (see Table 15)
MENU	Shows the main OSD Menu
Navigation arrows	Allows maneuvering within an OSD screen (left, right, up and down, as well as the ENTER arrow at the center)
Auto Image	Assesses the image and improves the quality accordingly, by automatically adjusting the phase, frequency and position
Save	Saves a profile
Recall	Recalls a profile
Picture	Shows the Picture OSD menu
PIP source	9 separate keys for selecting each of the following PIP sources: Input 1, Input 2, Input 3, Input 4, VGA 1, VGA2, HDMI 1, HDMI 2 and USB (note, the “USB” key may be excluded on some remote control transmitters)
Mute	Mutes the audio signal
Swap	Toggles between the PIP content and the parent screen content
PIP	Selects the picture-in-picture function and illuminates the PIP button[3]

1 Can be programmed to mute the audio signal at the same time (see Table 15)

2 Press and hold for about 2 seconds to reset to XGA; or press and hold for about 5 seconds to reset to 720p

3 See section 7.2

8 Configuring the OMX-7280 via the OSD MENU Screens

The OSD superimposes a menu on the screen from which you can configure and control each input signal on your **OMX-7280**, using the MENU, ENTER, ◄, ►, ▲ and ▼ OSD buttons on the front panel and the remote transmitter.

To use the OSD menus:

1. Select the desired input signal.
2. Use the menu buttons as follows:
   - Press the MENU front panel OSD button or the MENU key on the infra-red remote control transmitter (see Figure 7) to display the main MENU screen[1], which displays eight interactive icons (see Figure 8)
   - Press the MENU front panel OSD button or the MENU key on the infra-red remote control transmitter to move to the previous level in the OSD screen (Esc)
   - Press the UP or DOWN buttons to select menu icons and then press ENTER
   - Use + and – buttons to increase and decrease the (numerical) rate respectively

Figure 8: MENU Items

1 Each icon represents a Level 1 function. In addition to Level 1, the OSD structure includes Level 2 (a subset of level 1), Level 3 (a subset of level 2), Level 4 (a subset of level 3) and a numerical range

8.1 The Input Screen

Figure 9 and Table 5 define the Input screen.

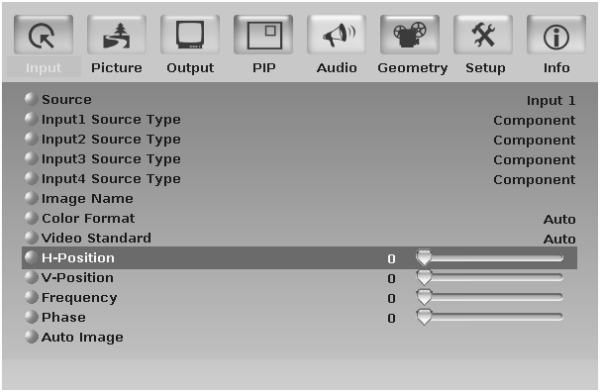


Figure 9: Input Screen

Table 5: Input Screen Functions

Setting	Function	Selection/Range	Default
Source[1]	Select the source[2]	Input 1, Input 2, Input 3, Input 4, VGA 1, VGA 2, HDMI 1, HDMI 2 or USB	
Input (1 to 4) Source Type	Select the source type	Component, YC or video (CV)	Video
Image Name	Shows the file name[3] that is displayed when the USB port is connected		
Color Format	Select the color format	Auto, RGB or YUV	Auto
Video Standard	Select the video standard	Auto, NTSC, PAL, PAL-M, PAL-N, NTSC 4.43, SECAM or PAL-60	Auto
H-Position	Set the horizontal position[4]	The range changes according to the input mode	
V-Position	Set the vertical position	The range changes according to the input mode	
Frequency	Adjust the frequency[5]	0 to 26	0
Phase	Adjust the phase	0 to 31	0
Auto image	Assesses the image and improves the quality accordingly, by automatically adjusting the phase, frequency and position		

1 When switching sources, the image fades through black

2 Automatically updated when pressing an input front panel button on the machine

3 Supports JPEG format only, including EXIF data (Exchangeable Image File Format). The JPEG file should not exceed a resolution of 1920x1200. If the image file is not within the definition, the machine displays the message: “Non EXIF File” or “Size Too Big”

4 For UXGA and component video inputs

5 For UXGA inputs

8.2 The Picture Screen

Figure 10 and Table 6 define the Picture screen.

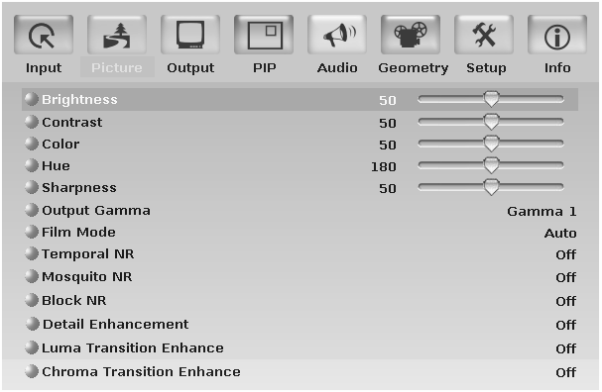


Figure 10: Picture Screen

Table 6: Picture Screen Functions

Setting	Function	Selection/Range	Default
Brightness	Adjust the brightness	0 to 100	50
Contrast	Adjust the contrast	0 to 100	50
Color	Adjust the color	0 to 100	55
Hue	Adjust the hue	0 to 360	180
Sharpness	Adjust the sharpness	0 to 100	50
Output Gamma	Adjust the gamma	Gamma 1 to Gamma 5	Gamma 1
Film Mode	Set the film mode	Auto, Video, Film	Auto
Temporal NR	Set the temporal noise reduction level	Off, Low, Medium, High	High
Mosquito NR	Set the Mosquito noise reduction level	Off, Low, Medium, High	Low
Block NR	Set the block noise reduction level	Off, On	Off
Detail Enhancement	Set the detail enhancement	Off, Low, Medium, High	Medium
Luma Transition Enhance	Set the luminance transition enhance level	Off, Low, High	Low
Chroma Transition Enhance	Set the chrominance transition enhance level	Off, Low, High	Low

8.3 The Output Screen

Figure 11 and Table 7 define the Output screen.

Figure 11: Output Screen

Table 7: Output Screen Functions

Setting	Function	Selection/Range	Default
Resolution	Set the resolution[1]	Native HDMI, 640x480x60Hz, 640x480x75Hz, 800x600x60Hz, 800x600x60Hz, 800x600x75Hz, 1024x768x50Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x768x50Hz, 1280x768x60Hz, 1280x1024x50Hz, 1280x1024x60Hz, 1280x1024x50Hz, 1366x768x50Hz, 1366x768x60Hz, 1400x1050x50Hz, 1400x1050x50Hz, 1600x1200x50Hz, 1600x1200x60Hz, 1680x1050x60Hz, 480p, 576p, 720p 50Hz, 720p 60Hz, 1080i 50Hz, 1080i 60Hz, 1080p 50Hz, 1080p 60Hz or Custom	1024x768@60Hz
HDMI Type[2]	Set the HDMI type	Auto, HDMI, DVI	auto
Aspect Ratio	Set the aspect ratio	Standard, Letterbox, Anamorphic, Virtual Wide, Native, Custom	Standard
H-Pan[2]			
V-Pan[2]			
H-Zoom [2]			
V-Zoom[2]			
Zoom	Set the Zoom	100%, 150%, 200%, 225%, 250%, 275%, 300%, 325%, 350%, 375%, 400%, Custom[2]	100%
Custom Zoom[2]	Set the Zoom	From 100% to 400%	
Zoom H-Pan[2]		0 to 31	16
Zoom V-Pan[2]		0 to 31	16

1 Any change in the resolution must be confirmed via the count-down message that appears on the screen

2 Available for versions VTB 1.01 and higher

8.4 The PIP Screen

Figure 12 and Table 8 define the PIP screen.

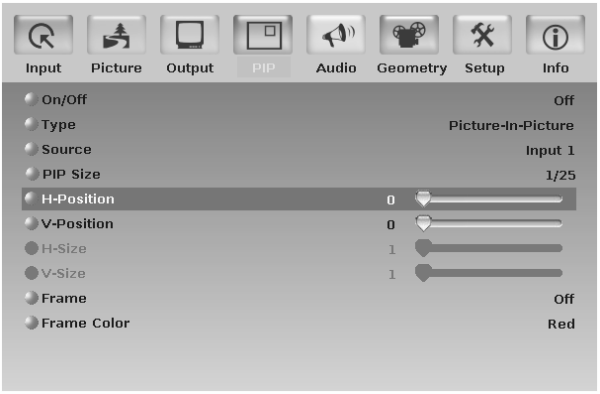


Figure 12: PIP Screen

Table 8: PIP Screen Functions

Setting	Function	Selection/Range	Default
On/Off	Activate/deactivate the PIP feature	On/Off	Off
Type	Select the PIP type	Picture-In-Picture, Picture + Picture or Split	Picture-In-Picture
Source	Select the PIP source[1]	Input 1, Input 2, Input 3, Input 4 or USB (for a video PIP source)	
		UXGA 1, UXGA 2, HDMI 1 or HDMI 2	
PIP Size	Select the PIP size	1/25, 1/16, 1/9, 1/4, or Custom[2]	1/4
H-Position	Set the horizontal position of the PIP on the display	0 – 128	3
V-Position	Set the vertical position of the PIP on the display	0 – 128	0
H-Size[2]	Set custom size		
V-Size[2]	Set custom size		
Frame	Turn the PIP frame on or off	On/Off	On
Frame Color	Select the color of the PIP frame	Red, Green or Blue	Blue

1 When changing the PIP source, the display fades through black

2 Available for versions VTB 1.01 and higher

8.5 The Audio Screen

Figure 13 and Table 9 define the Audio screen.

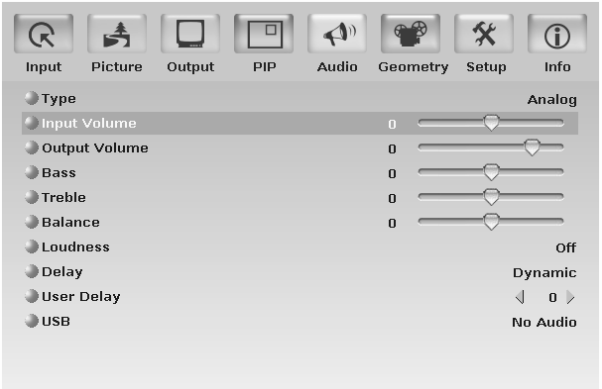


Figure 13: Audio Screen

Table 9: Audio Screen Functions

Setting	Function	Selection/Range	Default
Type	Select the audio input type[1]	Analog or S/PDIF	Analog
Input Volume	Adjust the input volume	-22 to 22	0
Output Volume	Adjust the output volume	-100 to 24	0
Bass	Adjust the bass	-36 to 36	0
Treble	Adjust the treble	-36 to 36	0
Balance	Adjust the balance	-10 to 10	0
Loudness	Set the loudness	On/Off	Off
Delay	Define the delay type	Dynamic or User Define	Dynamic[2]
User Delay	Available when selecting the User Defined delay	0 to 340[3] (msec)	0
USB	Select the audio signal to follow the USB signal	No Audio, Input 1, Input 2, Input 3, Input 4, VGA 1, HDMI 1 or HDMI 2	No Audio

1 Available for IN 1 to IN 4

2 Dynamic means that the audio delay is equal to the pipeline video delay

3 In steps of 2msec

8.6 The Geometry Screen

Figure 14 and Table 10 define the Geometry screen, allowing the user flexibility in positioning his projector relative to the screening surface.

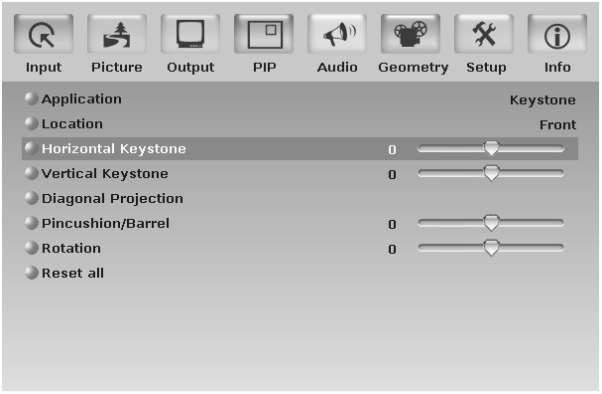


Figure 14: Geometry Screen

Table 10: Geometry Screen Functions

Setting	Function	Selection/Range	Default
Application	Select the output application	Keystone, Anyplace or Rotation	Keystone
Location	Select the location of the display	Front, Rear, Ceiling or Rear ceiling	Front
Horizontal Keystone	Adjust the horizontal keystone[1]	-40 to 40	0
Vertical Keystone	Adjust the vertical keystone[2]	-30 to 30	0
Diagonal Projection	move the location of each corner of the display separately	Top Left, Top Right, Bottom Left, Bottom Right or Reset (to reset diagonal projections settings)	Top Left
Pincushion/Barrel	Adjust the pincushion or barrel appearance of the screen	-20 to 20	0
Rotation	Rotate the display by 180 degrees clockwise or counterclockwise	-180 to 180	0
Reset all	Resets the geometry values to their default value		

Table 11 defines the settings available for each application:

Table 11: Available Settings for Each Application

Application	Available Settings
Keystone	Location, horizontal keystone, vertical keystone, pincushion/barrel and Reset all
Anyplace	Location, Diagonal Projection and Reset all
Rotation	Location, pincushion/barrel, Rotation and Reset all

1 If the projector is located at an angle to the left or right of the screen

2 If the projector is located at an angle above or below the screen

8.7 The Setup Screen

Figure 15 and Table 10 define the Setup screen.

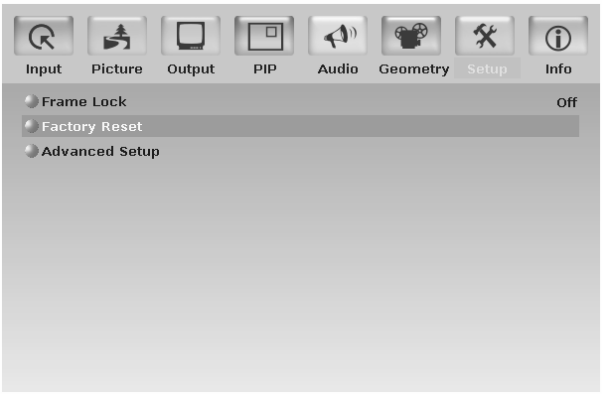


Figure 15: Setup Screen

Table 12: Setup Screen Functions

Setting	Function	Selection/Range	Default
Save[1]	Save a profile	From Profile 1 to Profile 8	
Recall[1]	Recall a profile	From Profile 1 to Profile 8	
Frame Lock	Locks the vertical refresh rate of the output to that of the input[2]	On/Off	Off
Factory Reset	Reset your **OMX-7280** to its preset default settings	Yes/No	
Advanced Setup:	Open the advanced setups (see Figure 16)	Mode Set (see Table 13) OSD (see Table 14) Misc (see Table 15) Input (see Table 16) Output (see Table 17)	

1 Available for versions VTB 1.01 and higher

2 Note that seamless switching is not possible when working in the Frame Lock mode unless all sources are frame synchronized

8.7.1 The Advanced Setup Screen

Figure 16 and Table 14 to Table 17 (inclusive) define the Advanced Setup screen.

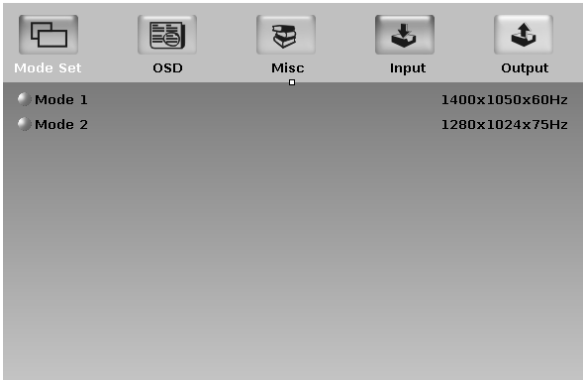


Figure 16: Advanced Setup Screen

The Mode Set functions define the desired working resolution and refresh rate when the system cannot distinguish between similar resolutions and refresh rate values (see Table 13).

Table 13: Mode Set Functions

Setting	Function	Selection/Range	Default
Mode 1[1]	Set mode 1	1400x1050x60Hz 1680x1050@60Hz	1400x1050x60Hz
Mode 2[1]	Set mode 2	1280x1024x75Hz 1280x1024x76Hz	1280x1024x75Hz

Table 14: OSD Functions

Setting	Function	Selection/Range	Default
Menu Position	Set the location of the OSD menu	Center, Top Left, Bottom Left, Bottom right	Top Right
Time Out (sec)	Set the OSD menu timeout	5, 10, 20, 30, 60, 90 or Off	30

1 Available for versions VTB 1.01 and higher

Table 15: Misc Functions

Setting	Function	Selection/Range	Default
Logo	Choose ON for the start up logo to appear on the screen OFF for it not to appear Set to Custom to download a custom Logo[1] (Flash ROM)	On, Off or Custom	Logo
Blank Color	Set the blank color (the color that appears on the screen when the blank button is pressed)	Black or Blue	Blue
Capture	Press to capture the desired image input[2] to Flash ROM for using as a logo or as the background	Prompts “Capture” If the image size is not within the definition, prompts “Size Too Big”	
Background	Set the background screen color	Blue, Black, Custom[3]	Default
Save Lock	Set the Save Lock option to ON to save the lock status when the machine is powered down	On/Off	Off
Input Lock	Set the Input Lock to OFF so you can still use the SOURCE buttons on the front panel even when the lock button is on	On/Off	Off
Firmware Download	Download the firmware via the USB connection (see Figure 17)	Confirmation	
Logo Download	Download a new logo via the USB connection		
Blank	Define the function of the BLANK front panel button	Blank & Mute, Blank, Mute	Blank & Mute
Freeze	Define the function of the FREEZE front panel button	Freeze & Mute, Freeze, Mute	Freeze & Mute

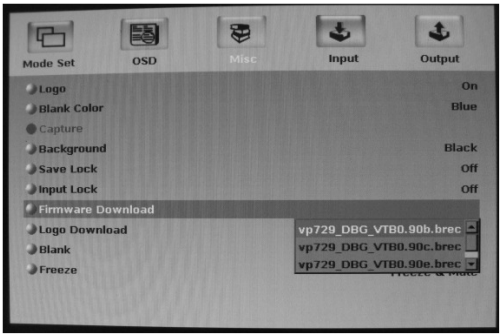


Figure 17: Firmware Download Screen

1 Obtained via the Capture function or downloaded via USB

2 The capture image size should not exceed 1280x1024

3 Obtained via the Capture function or downloaded via USB. Available for versions VTB 1.01 and higher

Table 16: Input Functions[1]

Setting	Function
H Total	Horizontal Total
H Start	Horizontal active start point
H Active	Horizontal active region
V Total	Vertical Total
V Start	Vertical active start point
V Active	Vertical active region
Ch, Pump	Charge pump current
H Freq	Horizontal Frequency
V Freq	Vertical Frequency
Color	Color format
Save	Save settings
Erase	Erase settings
Measure	Select between Default and User Define

Table 17: Output Functions[1]

Setting	Function
HT	Horizontal total
HW	Horizontal sync pulse width
HS	Horizontal active start point
HA	Horizontal active region
HP	Horizontal polarity
VT	Vertical total
VW	Vertical sync pulse width
VS	Vertical active start point
VA	Vertical active region
VP	Vertical polarity
OCLK	Output clock
Confirm	Confirm the action
Discard	Cancel the action
Set Current	Import the values of the currently selected output resolution into the User Mode Setting

1 Available for versions VTB 1.01 and higher

8.8 Verifying Configuration Details via the Info Screen

From the Information screen (see Figure 18), you can verify the main source, PIP source, the output resolution, the SYNC mode, as well as the firmware version number:

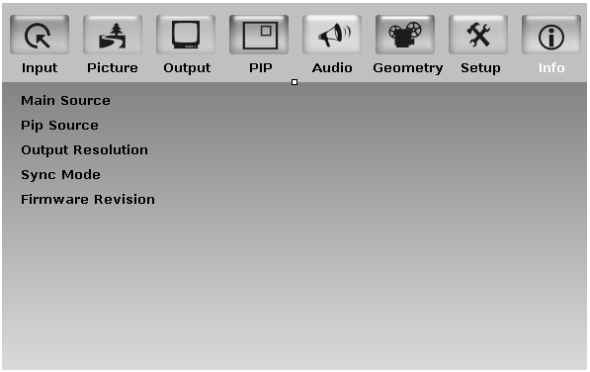


Figure 18: Information Screen

9 Technical Specifications

Table 18 includes the technical specifications:

Table 18: Technical Specifications[1] of the OMX-7280 Presentation Switchers / Scaler

INPUTS:	4 x universal Y/CV, Pb/C, Pr (composite, s-Video and component) 1 Vpp/75Ω on RCA connectors; 2 x UXGA on an HD15F connector (VGA through UXGA) 2 x HDMI connectors 1 x USB connector For each universal input there is a corresponding (unbalanced) audio stereo input and digital S/PDIF input on RCA connectors For each UXGA input there is a corresponding (unbalanced) audio stereo input on a 3.5mm mini jack connector
OUTPUTS:	1 HDMI connector 1 UXGA format on an HD15 connector 1 unbalanced audio stereo output on RCA connectors 1 digital S/PDIF output on an RCA connector
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI 1.3 and HDCP
OUTPUT RESOLUTIONS:	Native HDMI, 640x480x60Hz, 640x480x75Hz, 800x600x60Hz, 800x600x60Hz, 800x600x75Hz, 1024x768x50Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x768x50Hz, 1280x768x60Hz, 1280x1024x50Hz, 1280x1024x60Hz, 1280x1024x50Hz, 1366x768x50Hz, 1366x768x60Hz, 1400x1050x50Hz, 1400x1050x50Hz, 1600x1200x50Hz, 1600x1200x60Hz, 1680x1050x60Hz, 480p, 576p, 720p 50Hz, 720p 60Hz, 1080i 50Hz, 1080i 60Hz, 1080p 50Hz, 1080p 60Hz or Custom
CONTROL:	Front panel buttons / OSD, IR remote control, RS-232 on a 9-pin D-sub connector, Picture-In-Picture: Video in Graphics (or vice versa) in any size and at any location, or Split Screen (2 images side-by-side)
ADDITIONAL CONTROLS:	Freeze, zoom, different selectable vertical refresh rates, Video and Audio ProcAmp control, output image scaling and aspect ratio change
POWER SOURCE:	100-240 VAC, 50/60 Hz, 30VA automatic power supply
DIMENSIONS:	19" (W), 9.3" (D) 1U (H) rack mountable
WEIGHT:	3kg (6.6lbs.) approx.
ACCESSORIES:	Null modem adapter, IR remote control, power cord

1 Specifications are subject to change without notice

Table 19: Technical Specifications of the RGBHV / RGBS (PC) / RGsB (PC) Signal

Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
640x480	60		1024x768	85	
640x480	67	Mac13	1024x800	84	Sun
640x480	72		1152x864	75	
640x480	75		1152x870	75	Mac21
640x480	85		1152x900	66	Sun
720x400	70		1152x900	76	Sun
720x400	85		1280x960	60	
800x600	56		1280x960	85	
800x600	60		1280x768	60	
800x600	72		1280x1024	60	
800x600	75		1280x1024	75	
800x600	85		1280x1024	76	Sun(12/1)
832x624	75	Mac16	1280x1024	85	
1024x768	60		1400x1050	60	
1024x768	70		1400x1050	75	
1024x768	75		1600x1200	60	
1024x768	75	Mac19	1680x1050	60	(12/1)

Table 20: Technical Specifications of the Y/C, Video Signal

Standard	NTSC, NTSC4.43, PAL, PAL-M, PAL-N, SECAM, PAL-60

Table 21: Technical Specifications of the DVI Signal (for RGB Colorspace)

Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
640x480	60		1024x768	85	
640x480	67	Mac13	1024x800	84	Sun
640x480	72		1152x864	75	
640x480	75		1152x870	75	Mac21
640x480	85		1152x900	66	Sun
720x400	70		1152x900	76	Sun
720x400	85		1280x960	60	
800x600	56		1280x960	85	
800x600	60		1280x768	60	
800x600	72		1280x1024	60	
800x600	75		1280x1024	75	
800x600	85		1280x1024	76	Sun(12/1)
832x624	75	Mac16	1280x1024	85	
1024x768	60		1400x1050	60	
1024x768	70		1400x1050	75	
1024x768	75		1600x1200	60	
1024x768	75	Mac19	1680x1050	60	(12/1)

Table 22: Technical Specifications of the HDMI Signal (for RGB or YUV Colorspace)

Resolution	Vertical Frequency (Hz)	Remark
1080i	60	YPbPr
1080i	50	YPbPr
1080p	60	YPbPr
1080p	50	YPbPr
720p	60	YPbPr
720p	50	YPbPr
480i	60	YPbPr
480p	60	YPbPr
576i	50	YPbPr
576p	50	YPbPr

Table 23: Technical Specifications of the Component Input Signal

Resolution	Vertical Frequency (Hz)	Remark
1080i	60	YPbPr
1080i	50	YPbPr
1080p	60	YPbPr
1080p	50	YPbPr
720p	60	YPbPr
720p	50	YPbPr
480i	60	YPbPr
480p	60	YPbPr
576i	50	YPbPr
576p	50	YPbPr

Table 24: Technical Specifications of the RGBHV/Comp/YPbPr Output Signal

Resolution	Vertical Frequency (Hz)	Remark
640x480	60	RGBHV
640x480	75	
800x600	50	
800x600	60	
800x600	75	
1024x768	50	
1024x768	60	
1024x768	75	
1280x768	50	
1280x768	60	
1280x1024	50	
1280x1024	60	
1280x1024	75	
1366x768	50	
1366x768	60	
1400x1050	50	
1400x1050	60	
1600x1200	50	
1600x1200	60	
1920x1080	60	RGBHV
1680x1050	60	VESA
1080i	60	Comp/YPbPr
1080i	50	
720p	60	
720p	50	
480p	60	
576p	50	
1080p	50	
1080p	60	

Table 25: Technical Specifications of the HDMI/DVI/RGB Output Signal

Resolution	Vertical Frequency (Hz)	Remark
640x480	60	DVI/RGB
640x480	75	
800x600	50	
800x600	60	
800x600	75	
1024x768	50	
1024x768	60	
1024x768	75	
1280x768	50	
1280x768	60	
1280x1024	50	
1280x1024	60	
1280x1024	75	
1366x768	50	
1366x768	60	
1400x1050	50	
1400x1050	60	
1600x1200	50	
1600x1200	60	
1920x1080	60	
1680x1050	60	VESA
1080i	60	HDMI
1080i	50	
720p	60	
720p	50	
480p	60	
576p	50	
1080p	50	
1080p	60	

Table 26: Technical Specifications of the 1920x1080 Output Signal

Standard	Timing	Pixel clock (MHz)	H Front porch + Right border	H Sync Width	H Back porch + Left border	H Total
VESA (non-CRT)	1920x1080x60	138.625	48	32	80	2080
V Front porch + Bottom border	**V Sync Width**	**V Back porch + Top border**	**V Total**	**Hsync polarity**	**Vsync polarity**	
2	5	24	1118	POS	NEG	

10 OMX-7280 Communication Protocol

Serial Configuration:

Baud rate: 9600 (Bits per second)

Data bits: 8bits

Parity: None

Stop bits: 1bit

Communication confirmation:

Send: CR

Reply: CR>

Set Command:

Send: Y■Control_Type■Function■Param■CR

Reply: Z■Control_Type■Function■Param■CR>

Get Command:

Send: Y■Control_Type■Function■CR

Reply: Z■Control_Type■Function■Param■CR>

Example: set Input 1 Source Type to Component

Send: Y■0■0■0■CR

Reply: Z■0■0■0■CR>

Example: get current Input 1 Source Type

Send: Y■1■0■CR

Reply: Z■1■0■0■CR >

Control Type		Function	Parameter	Description
Set	Get			
0	1	0	0: Input 1 1: Input 2 2: Input 3 3: Input 4 4: VGA 1 5: VGA 2 6: HDMI 1 7: HDMI 2 8: USB	Input Source
0	1	1	0: Component 1: YC 2: Video	Input 1 Source Type
0	1	2	0: Component 1: YC 2: Video	Input 2 Source Type
0	1	3	0: Component 1: YC 2: Video	Input 3 Source Type
0	1	4	0: Component 1: YC 2: Video	Input 4 Source Type
0	1	5	0: Auto 1: RGB 2: YUV	Input Color Format
0	1	6	0: Auto 1: NTSC 2: PAL 3: PAL-M 4: PAL-N 5: NTSC 4.43 6: SECAM 7: PAL-60	Input Video Standard
0	1	7	-50 ~ 50	Input H-Position
0	1	8	-40 ~ 40	Input V-Position
0	1	9	-50 ~ 50	Input Frequency
0	1	10	0 ~ 31	Input Phase
0	-	11	-	Input Auto Image
0	1	12	0~100	Picture Brightness
0	1	13	0~100	Picture Contrast
0	1	14	0~100	Picture Color
0	1	15	0~360	Picture Hue
0	1	16	0~100	Picture Sharpness
0	1	17	0: Gamma 1 1: Gamma 2 2: Gamma 3 3: Gamma 4 4: Gamma 5	Picture Output Gamma
0	1	18	0: Auto 1: Video 2: Film	Picture Film Mode

Control Type		Function	Parameter	Description
Set	Get			
0	1	19	0: Off 1: Low 2: Medium 3: High	Picture Temporal NR
0	1	20	0: Off 1: Low 2: Medium 3: High	Picture Mosquito NR
0	1	21	0: Off 1: On	Picture Block NR
0	1	22	0: Off 1: Low 2: Medium 3: High	Picture Detail Enhancement
0	1	23	0: Off 1: Low 2: High	Picture Luma Transition Enhance
0	1	24	0: Off 1: Low 2: High	Picture Chroma Transition Enhance
0	1	25	0 : Native HDMI 1 : 640x480@60Hz 2 : 640x480@75Hz 3 : 800x600@50Hz 4 : 800x600@60Hz 5 : 800x600@75Hz 6 : 1024x768@50Hz 7 : 1024x768@60Hz 8 : 1024x768@75Hz 9 : 1280x768@50Hz 10: 1280x768@60Hz 11: 1280x1024@50Hz 12: 1280x1024@60Hz 13: 1280x1024@75Hz 14: 1366x768@50Hz 15: 1366x768@60Hz 16: 1400x1050@50Hz 17: 1400x1050@60Hz 18: 1600x1200@50Hz 19: 1600x1200@60Hz 20: 1680x1050@60Hz 21: 480p@60Hz 22: 576p@60Hz 23: 720p@50Hz 24: 720p@60Hz 25: 1080i@50Hz 26: 1080i@60Hz 27: 1080p@50Hz 28: 1080p@60Hz 29: Custom	Output Resolution

Control Type		Function	Parameter	Description
Set	Get			
0	1	26	0: Auto 1: HDMI 2: DVI	Output HDMI Type
0	1	27	0: Standard 1: Letterbox 2: Anamorphic 3: Virtual Wide 4: Native 5: Custom	Aspect Ratio
0	1	28	-64 ~ 64	H-Pan
0	1	29	-64 ~ 64	V-Pan
0	1	30	-32 ~ 32	H-Zoom
0	1	31	-32 ~ 32	V-Zoom
0	1	32	0: 100% 1: 150% 2: 200% 3: 225% 4: 250% 5: 275% 6: 300% 7: 325% 8: 350% 9: 375% 10: 400% 11: Custom	Zoom
0	1	33	100 ~ 400	Custom Zoom
0	1	34	0 ~ 31	Zoom H-Pan
0	1	35	0 ~ 31	Zoom V-Pan
0	1	36	0: On 1: Off	PIP On/Off
0	1	37	0: Picture-In-Picture 1: Picture + Picture 2: Split	PIP Type
0	1	38	0: Input 1 1: Input 2 2: Input 3 3: Input 4 4: VGA 1 5: VGA 2 6: HDMI 1 7: HDMI 2 8: USB	PIP Source
0	1	39	0: 1/25 1: 1/16 2: 1/9 3: 1/4 4: Custom	PIP Size
0	1	40	0 ~ 128	PIP H-Position
0	1	41	0 ~ 128	PIP V-Position
0	1	42	1 ~ 32	PIP H-Size
0	1	43	1 ~ 32	PIP V-Size

Control Type		Function	Parameter	Description
Set	Get			
0	1	44	0: On 1: Off	PIP Frame
0	1	45	0: Red 1: Green 2: Blue	PIP Frame Color
0	1	46	0: Analog 1: S/PDIF	Audio Input Type
0	1	47	-22~0~+22	Audio Input Volume
0	1	48	-100~24	Audio Output Volume
0	1	49	-36~0~+36	Audio Bass
0	1	50	-36~0~+36	Audio Treble
0	1	51	-10~10	Audio Balance
0	1	52	0: Off 1: On	Audio Loudness
0	1	53	0: Dynamic 1: User Define	Audio Delay
	1	54	0~340(step 2)	User Delay
0	1	55	0: No audio 1: Input 1 2: Input 2 3: Input 3 4: Input 4 5: VGA1 6: VGA2 7: HDMI1 8: HDMI1	Audio Input For USB
0	1	56	0: Keystone 1: Anyplace 2: Rotation	Geometry Application
0	1	57	0: Front 1: Rear 2: Ceiling 3: Rear ceiling	Geometry Location
0	1	58	-40 ~ 40	Geometry Horizontal Keystone
0	1	59	-30~30	Geometry Vertical Keystone
0	1	60	0: Top Left 1: Top Right 2: Bottom Left 3: Bottom Right 4: Reset	Geometry Diagonal Projection
0	1	61	-20 ~ 20	Geometry Pincushion/Barrel
0	1	62	-180 ~ 180	Geometry Rotation
0	-	63	-	Geometry Reset all
0	-	64	1 ~ 8	Save Setting
0	-	65	1 ~ 8	Recall Setting
0	1	66	0: On 1: Off	Frame Lock
0	-	67	-	Factory Reset

Control Type		Function	Parameter	Description
Set	Get			
-	1	68	-	Firmware Revision
0	1	69	0: 1400x1050x60 1: 1680x1050x60	Mode Set – Mode 1
0	1	70	0: 1280x1024x75 1: 1280x1024x76	Mode Set – Mode 2
0	1	71	0: Center 1: Top Left 2: Top Right 3: Bottom Left 4: Bottom Right	OSD Menu Position
0	1	72	0: 5 sec 1: 10 sec 2: 20 sec 3: 30 sec 4: 60 sec 5: 90 sec 6: Off	OSD Time Out
0	1	73	0: On 1: Off 2: Custom	Logo
0	1	74	0: Blue 1: Black	Blank Color
0	-	75	-	Capture
0	1	76	0: Blue 1: Black	Background
0	1	77	0: Off 1: On	Save Lock
0	1	78	0: Off 1: On	Input Lock
0	-	79	0: Blank & Mute 1: Blank 2: Mute	Blank key function
0	-	80	0: Freeze & Mute 1: Freeze 2: Mute	Freeze key function
0	1	81	0: Off 1: On	Freeze
0	1	82	0: Off 1: On	Blank
0	1	83	0: Off 1: On	Power
0	-	84	-	Info
0	-	85	-	Menu
0	-	86	-	Top
0	-	87	-	Down
0	-	88	-	Left
0	-	89	-	Right
0	-	90	-	Enter
0	-	91	-	Picture

Control Type		Function	Parameter	Description
Set	Get			
0	--	92	-	Swap
0	1	93	0: Off 1: On	Mute
0	1	94	0: Off 1: On	Lock
-	1	95	0: 640x480 60 1: 640x480 67 Mac13 2: 640x480 72 3: 640x480 75 4: 640x480 85 5: 720x400 70 6: 720x400 85 7: 800x600 56 8: 800x600 60 9: 800x600 72 10: 800x600 75 11: 800x600 85 12: 832x624 75 Mac16 13: 1024x768 60 14: 1024x768 70 15: 1024x768 75 16: 1024x768 75 Mac19 17: 1024x768 85 18: 1024x800 84 Sun 19: 1152x864 75 20: 1152x870 75 Mac21 21: 1152x900 66 Sun 22: 1152x900 76 Sun 23: 1280x960 60 24: 1280x960 85 25: 1280x768 60 26: 1280x1024 60 27: 1280x1024 75 28: 1280x1024 76 Sun 29: 1280x1024 85 30: 1400x1050 60 31: 1400x1050 75 32: 1600x1200 60 33: 1680x1050 60 34: 1080i 60 35: 1080i 50 36: 1080p 60 37: 1080p 50 38: 720p 60 39: 720p 50 40: 480i 41: 480p 42: 576i 43: 576p 98: other 99: No Input detected 101: NTSC	Main Input status

Control Type		Function	Parameter	Description
Set	Get			
			102: PAL 103: PAL-M 104: PAL-N 105: NTSC 4.43 106: SECAM 107: PAL-60	
-	1	96	0: 640x480 60 1: 640x480 67 Mac13 2: 640x480 72 3: 640x480 75 4: 640x480 85 5: 720x400 70 6: 720x400 85 7: 800x600 56 8: 800x600 60 9: 800x600 72 10: 800x600 75 11: 800x600 85 12: 832x624 75 Mac16 13: 1024x768 60 14: 1024x768 70 15: 1024x768 75 16: 1024x768 75 Mac19 17: 1024x768 85 18: 1024x800 84 Sun 19: 1152x864 75 20: 1152x870 75 Mac21 21: 1152x900 66 Sun 22: 1152x900 76 Sun 23: 1280x960 60 24: 1280x960 85 25: 1280x768 60 26: 1280x1024 60 27: 1280x1024 75 28: 1280x1024 76 Sun 29: 1280x1024 85 30: 1400x1050 60 31: 1400x1050 75 32: 1600x1200 60 33: 1680x1050 60 34: 1080i 60 35: 1080i 50 36: 1080p 60 37: 1080p 50 38: 720p 60 39: 720p 50 40: 480i 41: 480p 42: 576i 43: 576p 98: other 99: No Input detected	PIP Input status

Control Type		Function	Parameter	Description
Set	Get			
			101: NTSC 102: PAL 103: PAL-M 104: PAL-N 105: NTSC 4.43 106: SECAM 107: PAL-60	